

[00119] CLAIMS

1. A rotating electrical machine comprising:
  - a rear bearing (4);
  - a rotor (1) centered and mounted on a rotating shaft (2) supported by at least the rear bearing (4);
  - the rear bearing (4) comprising radial outlets (4a, 4d) for a cooling fluid;
  - a stator (3) surrounding the rotor;
  - the stator comprising a field coil (7) that has windings forming the phases of the electrical machine;
  - a power electronics circuit (15) connected to the windings of the stator phases;
  - a heat dissipating bridge (16) that has a first surface on which the power electronics circuit is mounted and a second surface, opposite said first surface and oriented toward the rear bearing;
  - said second surface forms a longitudinal wall of a passageway (17) for the flow of cooling fluid, and another longitudinal wall of this passageway (17) is formed by the rear bearing (4) supporting the rotor;
  - characterized in that the second surface of the heat dissipating bridge (16) has cooling means (18) arranged in the fluid flow passageway (17).
2. The rotating electrical machine according to Claim 1, characterized in that the cooling means (18) are arranged radially in the direction of the cooling fluid flow.
3. The rotating electrical machine according to Claim 2, characterized in that the cooling means include cooling fins (18).
4. The machine according to Claim 3, characterized in that the cooling fins (18) form radially oriented cooling channels.
5. The rotating electrical machine according to Claim 2, characterized in that the cooling means have columns (281, 282, 481, 381, 481, 581, 681).

6. The machine according to Claim 5, characterized in that the cooling means are comprised of fins and columns.
7. The machine according to Claim 5, characterized in that some of the columns (681) form contacts for mounting contacts the heat dissipating bridge (16) to the rear bearing (4).
8. The rotating electrical machine according to Claim 2, characterized in that the cooling means are formed with at least one cambered portion (280) of the second surface of the heat dissipating bridge.
9. The rotating electrical machine according to Claim 1, characterized in that the rear bearing has a bottom (40) that forms one of the walls of the fluid flow passageway (17), in that this bottom (40) is extended to its external periphery by an edge (41) equipped with lateral outlets (4a-4d) and in that the rear bearing holds at least one deflector (24) placed at the exit of the lateral outlets (4a-4d) of the edge (41) of the rear bearing (4).
10. The rotating electrical machine according to Claim 8, characterized in that it has a protective hollow cover (11) covering the power electronics circuit (15) and the heat dissipating bridge (16) and in that the deflector (24) is formed at the free end of the cover (11).
11. The rotating electrical machine according to Claim 9, characterized in that the free end (24) of the cover (11) is flared to form the deflector.
12. The rotating electrical machine according to Claim 9, characterized in that the protective cover (11) has at least one opening (19) that communicates with the cooling fluid flow passageway (17).
13. The rotating electrical machine according to Claim 1, characterized in that it has at least one space between the rotating shaft of the rotor and the heat dissipating bridge forming an axial fluid flow passageway.
14. The rotating electrical machine according to Claim 1, characterized in that the heat dissipating bridge (16) forms a mezzanine above the rear bearing (4).

15. The rotating electrical machine according to Claim 8, characterized in that the heat dissipating bridge is mounted on the rear bearing (4) with mounting braces (20).
16. The rotating electrical machine according to Claim 14, characterized in that the heat dissipating bridge is mounted above the rear bearing with contacts (21) integrated in the heat dissipating bridge.
17. The rotating electrical machine according to Claim 1, characterized in that it comprises of a layer of electrically insulating material between the heat dissipating bridge and the rear bearing.
18. The rotating electrical machine according to Claim 3, characterized in that the axial end of the fins integrated in the heat dissipating bridge are located away from the rear bearing.
19. The rotating electrical machine according to Claim 1, characterized in that the heat dissipating bridge, comprising the cooling means, and the bridge carrying the power electronics circuit are a single piece.
20. The rotating electrical machine according to Claim 1, characterized in that the power electronics circuit (15) comprises power components placed on tracks (25).
21. The rotating electrical machine according to Claim 1, characterized in that it comprises a reversible alternator.